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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/830,232	07/05/2001	Erwan Launay	9320.127USWO	3294
23552	7590	06/09/2004	EXAMINER	
MERCHANT & GOULD PC P.O. BOX 2903 MINNEAPOLIS, MN 55402-0903			AHN, SAM K	
		ART UNIT	PAPER NUMBER	
		2634		
DATE MAILED: 06/09/2004				

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)
	09/830,232	LAUNAY ET AL.
	Examiner	Art Unit
	Sam K. Ahn	2634

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) Responsive to communication(s) filed on preamendment, received on 4/24/01.

2a) This action is **FINAL**. 2b) This action is non-final.

3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) Claim(s) 1-8 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) Claim(s) _____ is/are allowed.

6) Claim(s) 1,2 and 5-8 is/are rejected.

7) Claim(s) 3 and 4 is/are objected to.

8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) The specification is objected to by the Examiner.

10) The drawing(s) filed on 05 July 2001 is/are: a) accepted or b) objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) All b) Some * c) None of:
1. Certified copies of the priority documents have been received.
2. Certified copies of the priority documents have been received in Application No. _____.
3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) Notice of References Cited (PTO-892)
2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 2.
4) Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
5) Notice of Informal Patent Application (PTO-152)
6) Other: ____.

DETAILED ACTION

Drawings

1. The drawings are objected to because it appears that the input to Antenna2 is the same as the input, $xk(n)$, to Antenna1, which is not shown in the single figure. A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Specification

2. The following guidelines illustrate the preferred layout for the specification of a utility application. These guidelines are suggested for the applicant's use.

Arrangement of the Specification

As provided in 37 CFR 1.77(b), the specification of a utility application should include the following sections in order. Each of the lettered items should appear in upper case, without underlining or bold type, as a section heading. If no text follows the section heading, the phrase "Not Applicable" should follow the section heading:

- (a) TITLE OF THE INVENTION.
- (b) CROSS-REFERENCE TO RELATED APPLICATIONS.
- (c) STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT.
- (d) INCORPORATION-BY-REFERENCE OF MATERIAL SUBMITTED ON A COMPACT DISC (See 37 CFR 1.52(e)(5) and MPEP 608.05. Computer program listings (37 CFR 1.96(c)), "Sequence Listings" (37 CFR 1.821(c)), and tables having more than 50 pages of text are permitted to be submitted on compact discs.) or
REFERENCE TO A "MICROFICHE APPENDIX" (See MPEP § 608.05(a). "Microfiche Appendices" were accepted by the Office until March 1, 2001.)
- (e) BACKGROUND OF THE INVENTION.
 - (1) Field of the Invention.
 - (2) Description of Related Art including information disclosed under 37 CFR 1.97 and 1.98.
- (f) BRIEF SUMMARY OF THE INVENTION.

- (g) BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING(S).
- (h) DETAILED DESCRIPTION OF THE INVENTION.
- (i) CLAIM OR CLAIMS (commencing on a separate sheet).
- (j) ABSTRACT OF THE DISCLOSURE (commencing on a separate sheet).
- (k) SEQUENCE LISTING (See MPEP § 2424 and 37 CFR 1.821-1.825. A "Sequence Listing" is required on paper if the application discloses a nucleotide or amino acid sequence as defined in 37 CFR 1.821(a) and if the required "Sequence Listing" is not submitted as an electronic document on compact disc).

Therefore, section headings of b, c, d, e and f appears to be missing in the application.

3. For the formality of the application under the present office practice, applicant(s) is required to replace "Claims" with "I or We Claim", "The Invention Claimed Is" (or the equivalent) before the Claims part of the specification of the instant application. See MPEP 608.01(m).

Claim Objections

4. Claims 1-8 are objected to because of the following informalities:

In claim 1, line 1, delete "Device" and insert "A device".

In claim 1, line 3, recites "the same source symbols" and suggests rewording the element as there is no antecedent basis.

In claim 1, lines 4-5, delete "each of said paths" and insert "each of said reception paths".

In claim 1, lines 5-6, delete "an estimated path value and a corresponding piece of path confidence information" and insert "estimated path values and corresponding path confidence information elements, and".

In claim 1, line 7, delete "a source symbol" and insert "said source symbols".

In claim 1, line 8, delete "it comprises" and insert "said reception paths comprise".

In claim 1, line 14, delete "elements," and insert "elements, and".

In claim 1, line 15, delete "values." and insert "value".

In claim 2, line 2-3, delete "the transmission channel" and insert "a transmission channel".

In claim 3, line 5, delete " \hat{x}_n " and insert " $\hat{x}_{i,n}$ ".

In claim 4, line 2, delete "adaptive" and insert "adapted".

In claim 5, line 1, delete "it" and insert "the reception device".

In claim 6, line 5, delete "modules" and insert "module".

In claim 6, line 6, delete "for the combination" and insert "for said means for the combination".

In claim 6, line 7, delete "supplied by said adapted estimated values" and insert "supplied with said adapted estimated value".

In claim 7, line 1, delete "Method" and insert "A method".

In claim 7, lines 3-4, delete "said paths" and insert "said reception paths".

In claim 7, line , delete "a weighted-input decoding" and insert "said weighted-input decoding means".

Claim 8 directly depend on claim 1.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 5 and 8 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claim 5, the claim recites "a single module" in line 6. It appears that the single module is equivalent to the means for the combination as there is no other element or means between the second module (105) and the adaptor (11).

Therefore, it is vague and indefinite to recite the common element as a single module and as a means for the combination.

Claim 8 merely recite used without any active, positive steps delimiting how these use are actually practiced. Without reciting any practiced, positive steps, claim 8 do not achieve the purpose of a method. Furthermore, it appears that claim 8 is an independent claim comprising all the elements recited in the other independent claim, however, claim 8 recites intended to depend on claim 1. The Office also suggests deleting "and/or" which makes the claim vague and indefinite.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and

the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1, 2 and 5-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fukumasa et al. (Fukumasa) in view of Khayrallah et al. (Khayrallah).

Regarding claims 1 and 7, Fukumasa teaches a method and an apparatus of a device for the reception of a multicarrier signal (OFDM), formed by a set of carrier frequencies, said device implementing at least two reception paths (see Fig.2) supplied with data flows, each conveying same source symbols (as same signal is attempted to be received through different reception paths), each of said reception paths comprising estimation means (22-1 ~ 22-N coupled to 41~43) associating with each of said source symbol received, estimated path values and corresponding path confidence information (difference between output of 42 and 43 calculated at combining means), and said source symbols being conveyed by a subset of said set of carrier frequencies (as this is OFDM implementation), characterized in that said reception paths comprise means for the combination (13, 24) of said estimated path values delivering; an adapted estimated value (received signal, output of 13,24) and an adapted confidence information element (weight) as a function of said path confidence information elements. (note col.6, lines 3-28)

However, Fukumasa does not explicitly teach, although it would be inherent to decode the signal received, a weighted-input decoding means supplied by said adapted estimated value. Khayrallah teaches, in the same field of endeavor,

receiving signals using at least two antennae, demodulating and estimating the signal received, and further, providing the output signals from a combiner (320A in Fig.4). (note col.5, lines 3-14) Therefore, it would have been obvious to one skilled in the art at the time of the invention to provide a decoder, which is coupled to a combiner (such as 320A of Khayrallah) to the combining means of Fukumasa (13, 24) for the purpose of producing a speech output or decoding the signal received, as the received signal is still coded and therefore needs to be decoded for further processing.

Regarding claim 2, Fukumasa in view of Khayrallah teach all subject matter claimed, as applied to claim 1. Fukumasa further teaches said estimation means (22-1 ~ 22-N coupled to 41~43) comprise means for the estimation of a transmission channel, delivering said path confidence information elements, as explained above.

Regarding claim 5, Fukumasa in view of Khayrallah teach all subject matter claimed, as applied to claim 1. Fukumasa further teaches the reception device implements at least two antennas, supplying distinct reception paths.(see 61-1 and 61-2 in Fig.1)

Regarding claim 6, Fukumasa in view of Khayrallah teach all subject matter claimed, as applied to claim 1. Fukumasa further teaches a first module shaping

and demodulating (21-1 ~ 21-N) the received signal and a second module (22-1 ~ 22-N coupled to 41~43) determining said estimated path values and said corresponding confidence information elements, said device furthermore comprising a single module (13, 24) supplied by said second module, delivering said adapted estimated value. And although Fukumasa does not teach a weighted-input decoding means supplied with said adapted estimated value, Khayrallah teaches this limitation, as explained in regards to claim 1.

Regarding claim 8, Fukumasa in view of Khayrallah teach all subject matter claimed, as applied to claim 1. Fukumasa further teaches wherein the reception of data belongs to the transmission of data signals application as the radio receiver receives speech signals which are transmitted as data signals. (note abstract)

Allowable Subject Matter

7. Claims 3 and 4 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims and overcome the claim objections.
8. The following is a statement of reasons for the indication of allowable subject matter:
Present application discloses method and apparatus of receiving a multi-carrier signal wherein the receiver comprises plurality of channel estimation an adaptor receiving the output of each channel estimation and a decoder coupled to the

adaptor. Closest prior arts, Fukumasa and Khayrallah teach in the same field of endeavor, all the limitations claimed. However, prior art, solely or combination, do not teach wherein the adapted estimated value computed by the adaptor is by multiplying a weight by the estimated signal for each reception path, which are summed and then divided by the sum of each weight of the reception paths. Furthermore, prior art do not teach, solely or in combination, wherein the weight being output by the decoder is the sum of all the weights computed by each of the channel estimators.

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Okanoue teaches a receiver comprising plurality of reception paths comoputing maximum likelihood sequence estimator.

Catipovic et al. teach diversity receiver comprising plurality of reception paths with corresponding channel estimators.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Sam Ahn** whose telephone number is **(703) 305-0754**.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, **Stephen Chin**, can be reached at **(703) 305-4714**.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks
P.O. Box 1450
Alexandria, VA 22313-1450

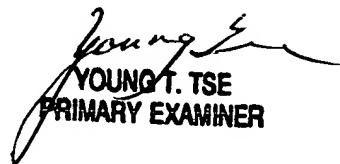
or faxed to:

(703) 872-9306

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington, VA., Sixth Floor (Receptionist).

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center 2600 Customer Service Office whose telephone number is (703) 306-0377.

Sam K. Ahn
6/1/04



YOUNG T. TSE
PRIMARY EXAMINER